

- (d) seek an hierarchy of control objects of increasing 'stability' so that objects C_1 are appraised relative to the (apparently more stable) objects C_2 , C_2 against the still more stable C_3 , and so on, until a type of control object C_n is found for which chance conditions can be invoked.

Regrettably, none of these options seems promising, for in order to obtain good results one would need the psi effect on the *target* objects to remain constant (in a sort of reversal of roles of target and control). However, there is little reason to think that the constant target effect would occur, even if the conditions on the target objects were kept as constant as possible; the unpredictability of psi rules this assumption out.

It seems exceedingly difficult to *refute* the susceptibility hypothesis. For example, if the control objects (I am thinking especially of living ones here) were found to be within the 'normal' range of states after the experiment was completed, the susceptibility hypothesisist could still claim that some psi had affected these objects to change them from one state within this range to the one that was found. Again, if the scenario described in (b) were executed and (more or less) the same degree of statistical significance were found between the target objects and all the sets of control objects, the susceptibility theory still allows the possibility that the percipient had exercised psi over *all* the objects in the experiment, and had affected them to a (roughly) constant degree, like my first example above.

The need at least to query the immunity hypothesis seems obvious. Why, then, is it not discussed by experimental psychical researchers? How can they *confidently* prefer the immunity hypothesis to the susceptibility hypothesis when control objects are used in psi experiments?

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USES AND ABUSES OF OCCAM'S RAZOR IN PARAPSYCHOLOGY

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It is well known that the philosopher, William of Ockham, 1280-1349 (better known as Occam), was one of the first to enunciate in a coherent and explicit manner the principle of parsimony or economy of explanation. The following passage is typical: 'Plurality is not to be posited without necessity', 'What can be explained by the assumption of fewer things is vainly explained by the assumption of more things'. The form usually given: 'entities must not be

multiplied without necessity' does not seem to have been used by Ockham himself (Ockham, 1964).

There is no doubt that Occam's razor has many virtues. Its judicious use can save the investigator from invoking futile explanations of an unnecessarily complex kind when more manageable ones are to hand. But, like all useful principles, it can be abused or used indiscriminately so as to sustain certain beliefs or conjectures for which Occam's razor should not be made to answer.

The case of parapsychology is an excellent example of how Occam's razor has been applied indiscriminately. It is our purpose to show that the principle of parsimony has many drawbacks and that its frequent use, by certain critics, only demonstrates that they have not understood its obvious limits. Exceeding these limits is not only fallacious but a dangerous way of curtailing the potentiality of other explanations. As this principle has been used mainly against parapsychology in general and against survival evidence in particular, we will consider each briefly in turn.

AGAINST PARAPSYCHOLOGY

Certain critics and sceptics have used Occam's razor to demonstrate that parapsychologists have failed to prove their case. For example, Hansel (1971) has this to say: 'I have suggested that when assessing an experiment we first assume ESP to be impossible, in the above sense, since if we can then account for the result of the experiment in terms of other processes that are both *theoretically* and *practically* possible there is little point in introducing the new concept ESP' (p. 9).¹ Or, again, referring to modern ESP experiments he says: 'It cannot be stated categorically that trickery was responsible for the results of these experiments, but so long as *the possibility* is present, the experiments cannot be regarded as . . . supplying conclusive evidence of ESP' (1966, p. 241).¹ Recently, Kelly and Saklofske (1981) made a similar statement: 'It is premature to entertain a paranormal hypothesis unless *all plausible 'normal' alternative hypotheses* have been ruled out' (p. 33).¹

AGAINST SURVIVAL EVIDENCE

Certain critics of the survival evidence have used Occam's razor to good effect. According to them, all survival evidence can be explained by other hypotheses whether normal (e.g. fraud, cryptomnesia etc.) or paranormal (e.g. super-ESP). Even if there is no direct evidence for such alternative hypotheses, so long as they can be invoked there is no need for a survivalist hypothesis. Two recent examples will suffice here: R. I. Anderson (1982), discussing a classic case, says: 'The principle of economy in explanation simply means that in those instances where two or more explanations can equally accommodate a given fact, the one to be preferred *as more probably* true is that which involves the fewest number of gratuitous assumptions' (p. 23).¹ Likewise Mario Capel (1981), a leading Spanish parapsychologist, who recently wrote a critique of Ian Stevenson's interpretation of reincarnation cases, argues that, as super-ESP *can conceivably* explain such cases, he sees no reason why we should favour a reincarnationist view since: 'the hypothesis which presents the simplest explanation of a

¹ Our italics.

phenomenon, *is more valid* than one that introduces unnecessary complications' (p. 376).¹

SUMMARY

We can now attempt to summarize some of the points brought forward by critics of parapsychology and of survival research:

1. It is spurious and futile to entertain a paranormal explanation if we can invoke other possible normal ones.
2. We may not know whether a given normal or parsimonious explanation is true but we are entitled to assume that it is.
3. As defined by Anderson or Capel, Occam's razor is much more than a useful but tentative guideline, it is, in fact, a principle of demarcation where the simplest solutions are 'more probably true' (Anderson) or 'more valid' (Capel).

It is the prime aim of this paper to cast doubt on these assumptions and to contend that these critics have not reflected sufficiently on the implications of their arguments.

DISCUSSION

We will base our discussion on three pivotal points:

1. That the conclusion that follows from the use of Occam's razor is frequently erroneous and misleading.
2. That the principle cannot fruitfully be applied to indefinite statements.
3. That, in consequence, parsimony cannot conceivably be a principle of demarcation.

A defence and discussion of each of these points now follows:

1. The view of the world where all laws and explanations were seen as simple can be taken back to Aristotle where, in Book V of *The Physics*, he says that: 'nature operates in the shortest way possible'. The critics of parapsychology and of survival echo Aristotle in holding that simplicity is inherent in nature. The concept of psi or of survival is too complex or mysterious for them and, since there exist other 'normal' possibilities, they claim to have the right to discount such concepts.

But, who says that the laws of nature have to be simple? And, more to the point, is it even true, as our critics imply, that parsimony has been so useful in science? To our first question, Bertrand Russell (1948/1976) has responded with his usual clarity: the principle, he argues, 'is both vague and teleological. It is not clear what is meant by 'simplicity' and there can be no a priori reason for expecting laws to be simple except benevolence on the part of providence toward the men of science' (p. 478). To our second question Russell's observations are likewise pertinent. After reviewing some classic examples of scientific theories that were from the very beginning more complex than former ones, but that turned out to be more exact, he concludes: 'A similar gradual loss of simplicity has characterized the history of most of the early discoveries of science' (p. 479). So, too, the philosopher of science, Mario Bunge (1972), in one of the most exhaustive analyses of the role of parsimony in science, concludes: 'It is clear, then, that truth holds no evident relationship with simplicity but rather with complexity' (p. 134).

What all this means is that the criterion of simplicity is not necessarily a mark of rationalism, empiricism or truthfulness. The history of science shows that its most important theories and explanations are characterized by mounting complexity, not by parsimony. To take one familiar example from the social sciences, efforts to explain all of human behaviour on purely S-R principles were undoubtedly simple and parsimonious but have failed in comprehensiveness (cf. Bandura, 1977). Hence it has become legitimate, scientific and rational to resort to neo-behaviouristic or cognitive type explanations.

2. As I have discussed elsewhere (Martínez-Taboas, 1982) and as Popper (1968) has clearly explained, when analyzing empirical statements it is important to distinguish between definite and indefinite statements.² A definite statement is one that provides enough information to make possible, in principle, its own falsification. Indefinite statements, on the other hand, imply only that something or other exists or can be explained but lacking precise empirical content they cannot be refuted. An instance of a definite statement would be the following: 'John Wright who lives at 19th Street, No. 111, San Diego, California, has the largest record of divorce of any man in the United States with 36 divorces'. An instance of an indefinite statement is the following: 'There exists a man somewhere in South America who has twice that number of divorces'. It will be obvious that the definite statement, since it restricts itself to a finite region of time and space, is in principle capable of disproof. Bearing this in mind we can appreciate why the application of Occam's razor to indefinite statements is, indeed, futile. What interests a scientist is not simplicity *per se* but the possibility of testing whether the simplest explanation is also the most fruitful in the circumstances. From this point of view indefinite statements are useless whether simple or not. Popper goes so far as to say that simplicity at the cost of substituting indefinite statements for definite ones can be dangerous from a scientific point of view: 'I call bad reduction or ad hoc reduction the method of reduction by merely linguistic devices . . .' (1972, p. 294). Similarly, Bunge criticizes such clever but unfortunate substitution as fallacious. He argues that in science, as opposed to metaphysics, the only acceptable simplifications are those that make the theory 'more manageable, more coherent and more testable . . . we must remember that the objective is economy, not the impoverishment of the theory' (p. 134).

What, however, is the direct relevance of all this to parapsychology? There is much indeed. To begin with, too many, if not most, of the explanations offered by sceptics are good examples of substituting definite observations by hypothetical indefinite ones. What happens, typically, with this kind of critic is the following. Suppose he reads of some successful series of experiments involving some paranormal phenomenon. Our parasimonious critic will say: 'I will apply Occam's razor and see whether any residue of truth will remain after its application'. He then, usually, starts by questioning retrospectively the character of the experimenter and subjects. Next he typically questions the safeguards used. They appeared reasonable and proper but perhaps they were not stringent enough. In short, since the possibility of a normal explanation

² Our distinction corresponds to Popper's distinction between 'empirical' and 'existential' statements but, in agreement with the editor, we are using the terms 'definite' and 'indefinite' as more immediately meaningful to the ordinary reader.

always exists, whether overt or covert, he can safely conclude that this latest series of experiments has not supplied any firm evidence of paranormality.

But this approach is just the sort of thing that Popper and Bunge have so vehemently denounced. What these critics call normal possibilities of explanation amount to little more than a linguistic reductionism supported by indefinite statements. As Bunge remarks, we need not only simplicity but exactitude and scrutability: 'vagueness and ambiguity, which are the secrets of success for magicians and politicians, are the best protection against refutations' (p. 140). Criticisms based on indefinite statements can be used to discredit the evidence by suggesting vague and imaginary possibilities with no risk of being disproved in their turn.

In the case of the survival controversy we encountered an identical situation. Since the super-ESP hypothesis is said to be 'simpler' or 'more natural' than survival itself we are told that there is no evidence for survival (see Anderson 1981). And yet this type of reasoning is the more peculiar in that the super-ESP hypothesis has many of the characteristics of a myth (cf. Gauld, 1961; Martinez-Taboas, 1982; Alvarado & Martinez-Taboas, in press).

3. Despite the assertions of Anderson and Capel which we have already mentioned, simplicity is an unreliable and invalid method of demarcation. As Bunge puts it: 'a theory can be simple and false or complex and approximately true; in other words, simplicity is not a necessary or sufficient sign of truth' (p. 179). The implications are clear: unparsimonious explanations whether paranormal or survivalist have a *prima facie* right to be taken seriously and not rejected out of hand as unscientific or irrational. In parapsychology, as in other scientific disciplines, observations and experiments can be faulted (cf. Plotkin, 1980, or Plotkin & Rice, 1981 on the 'alpha experience') but always on an empirical basis, never just on an appeal to parsimony.

CONCLUSION

No one believes more strongly than this author in the utility of Occam's razor for scientific thinking, if something can be explained empirically with fewer variables we should indeed desist from invoking a superfluity of variables. We want, moreover, to make it clear that not all critics of parapsychology have misused Occam's razor in the ways that we have discussed in this paper. Randi's critique of Geller's claims is a healthy example of its use, so is Marks' and Kammann's (1980) critique of the SRI investigations of remote viewing. Last but not least Markwick (1978) was not content with vague indefinite insinuations when dealing with the work of Soal but rightly looked for possible empirical counter-explanations that could be systematically tested.

We may conclude that Occam's razor is easily abused. Just as there were theologians and philosophers who thought that *a priori* reasoning could establish the existence of God so there are still those who assume that an *a priori* appeal to parsimony can invalidate paranormal hypotheses. Let Bunge have the last word here: 'In science, as in the barber's shop, it is more important to be alive and hairy than dead and shaved to the skin.'!

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BOOK REVIEWS

RUSKIN, LADY MOUNT-TEMPLE AND THE SPIRITUALISTS, AN EPISODE IN BROADLANDS HISTORY. By Van Akin Burd. Guild of St. George Ruskin Lecture 1982, Brentham Press, London, 1982. 33 pp. £1.80.

Professor Burd has been involved for thirty years in Ruskin studies. This fascinating monograph illuminates very vividly not only the figure of Ruskin himself but an unfamiliar aspect of the social and intellectual landscape in which psychical research developed. This is very often associated today with the universities, more especially Cambridge, with scientists and philosophers, and with their attempts, by collecting and examining eye witness accounts of spontaneous cases, and by carefully controlled experimental work to establish whether psi phenomena as such did indeed take place, or whether all could be attributed at best to illusion and at worst to fraud. An alternative scene is that of the Spiritualist movement, accepting such phenomena largely at their face value